DOCUMENT RESUME

ED 386 900 EC 304 293

TITLE Toy Play in Infancy and Early Childhood: Normal Development and Special Considerations for Children with Disabilities.

PUB DATE 6 Jun 94

NOTE 42p.; In: Research Synthesis on Early Intervention Practices. Technical Report No. 11; see EC 304 248.

PUB TYPE Information Analyses (070) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC02 Plus Postage.

DESCRIPTORS *Child Development; Cognitive Development; *Disabilities; Early Childhood Education; Infants; Instructional Material Evaluation; *Instructional Materials; *Media Selection; Parent Attitudes; *Play; Social Development; Toddlers; *Toys; Young Children

ABSTRACT

This paper presents a review of the literature on toy play in infancy and early childhood, with an emphasis on both normal development and special considerations for young children with disabilities. Specifically, it describes children's encounters with toys within a developmental framework, identifies characteristics of the child and aspects of the environment that influence toy preferences and the way in which children play with toys, and outlines a set of guidelines for the selection of appropriate toys including suggestions for adapting toy play for young children with special needs. Cognitive and social play categories are reviewed for infancy and the preschool period. Children's toy preferences are considered in terms of age, gender, socioeconomic status, and ability level. Environmental and contextual variables considered include the way the environment is arranged; the quantity, variety, and complexity of toys; the presence of peers and adults; the curriculum; and television. Several typologies for classifying toys are considered. Features that parents consider important in selecting toys are listed and discussed. Six guidelines are then offered, such as: consider the child's toy preferences and individual characteristics; identify individual or program goals associated with toy play; and adapt toys and the play environment to meet the needs of the child with special needs. (Contains 86 references.) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED 386 900

Toy Play in Infancy and Early Childhood: Normal Development and Special Considerations for Children with Disabilities

According to the well-known Russian psychologist, Lev Vygotsky, a young child uses objects in his or her physical environment as tools to accomplish some activity, and the use of tools as mediators of activity is linked ultimately to the child's intellectual development and learning (Bradley, 1985). Toys and other play materials are probably the most common "tools" available during infancy and the early childhood period. Very early in development, toys dominate in children's daily activities and play a crucial role in helping young children construct meaning from their everyday experiences. Play with toys is thought to be motivated by children's interests in mastering challenging tasks, their natural curiosity to understand the features of toys and how they work, and their desire to interact with others who share similar interests in toys, all of which serve to support children's cognitive and social development (Bruner, 1972, 1973; Harter, 1978; Mueller, 1979).

Play with toys is also vitally important in the lives of young children with disabilities. Insufficient opportunities to participate fully in toy play deprive young children with disabilities of a normal part of early childhood and jeopardize their intellectual and social development along with their well-being and happiness. Fortunately, with appropriate adaptations to toys and the play environment, many of these children will be able to engage in meaningful encounters with toys and other play materials.

This chapter presents a review of the literature on toy play in infancy and early childhood, with an emphasis on both normal development and special considerations for young children with disabilities. Specifically, it describes children's encounters with toys within a developmental framework; it identifies characteristics of the child and aspects of the environment that influence toy preferences and the way in which children play with toys; and it outlines a set of guidelines that can be used by parents and professionals to

EC304093

select the most appropriate toys for young children, including suggestions for adapting toy play for young children with special needs.

Development of Play with Toys and Materials

How young children learn to approach and interact with toys and materials is perhaps best understood in the context of play. The importance of play to educators and researchers is reflected in the prominent role it plays in early childhood curricula and myriad studies investigating the effects of play on children's intellectual and social development. Researchers have defined play in a variety of ways. Attempts to define play have generally included multiple criteria, with the most recent definition consisting of the following five criteria: nonliterality (i.e., using one thing to represent another), intrinsic motivation (i.e., a child's interests and curiosity), attention to means (i.e., focusing on "What can I do with it?"), freedom from external rules, and active engagement (i.e., full attention and participation) (Pellegrini & Boyd, 1993).

The elements of play described above apply to play contexts in which toys are present as well as those in which no toys are available. For example, a child who pretends to drink from a nonexistent cup and a child who uses a block to represent a baby's bottle are both exhibiting symbolism in their play. Furthermore, play may involve other people, but it can also occur in isolation. The efforts of early researchers to characterize these dimensions led to categorization schemes for two different but related forms of play: cognitive play and social play (Parten, 1932; Piaget, 1932; Smilansky, 1968). These schemes are summarized in Table 1. Dempsey and Frost (1993) point out that, with only minor adaptations by recent researchers, the merger of these two schemes into a nested hierarchy (Rubin, Maioni, & Hornung, 1976) "continues to dominate as a framework for the study of play" (p. 307).

Table 1. Cognitive and Social Play Categories

Cognitive Play

1. Functional Play — manipulating objects in a functional manner (e.g., dialing a telephone), combining objects, or repeated movements with objects (e.g., banging a cup and spoon together)

2. Constructive Play — product-oriented behavior (e.g., building a block tower)

3. Dramatic Play — pretense (e.g., pretending to feed a doll with a bottle)

4. Games with Rules — adjusting one's behavior to prearranged rules (e.g., board games, hop scotch)

Social Play

1. Unoccupied — not engaged in any type of meaningful activity

2. Solitary — playing alone

3. Onlooker — watching others play

4. Parallel — playing near but not with others

5. Associative — initiating or responding to interactions with peers

6. Coordinated — coordinating one's behavior with that of a peer

---

At each stage of development, young children play with toys in a fairly predictable manner. A description of common forms of play during infancy and the preschool period follows.

Infancy. During the period from birth to approximately 2 years of age, exploration is the predominant form of play with objects (Pellegrini & Boyd, 1993). Initially, exploration of toys and other objects takes the form of indiscriminate mouthing and simple manipulation; however, in the course of development these behaviors are gradually replaced by functional play indicating knowledge of how toys should be used (e.g., pushing a toy vehicle), activities that involve the combination of two or more objects (e.g., placing one block on top of another), and various forms of pretense play which

signal the ability to use symbolic thought processes (e.g., pretending to eat with a spoon) (Belsky & Most, 1981). Another important milestone for a toddler is the ability to focus one's attention simultaneously on toys and people. Referred to as "joint attention" (Jacobson, 1981), this ability allows the child to engage other children or adults in toy play through simple exchanges such as offering and receiving objects or coordinated exchanges such as turn taking (e.g., patting a book using alternating turns).

Preschool period. Fantasy play, which begins during the second year of life and continues until the age of 5 or 6 when it begins to decline, is considered a predominant form of play during the preschool period (Pellegrini & Boyd, 1993; Pellegrini & Perlmutter, 1989). To encourage fantasy play, early educators commonly equip their preschool classrooms with commercial toys and props such as doctor kits and dress-up clothes and establish areas within the classroom for dramatic play (e.g., the housekeeping corner). According to Pellegrini and Boyd (1993), several characteristics of fantasy play during the preschool period distinguish it from earlier forms observed during infancy. First, compared to infants and toddlers, preschoolers tend to be other-referenced as opposed to self-referenced in their play with toys. For example, rather than pretending to brush one's own hair, a preschooler might brush a doll's hair or that of another child. Second, children's dependence on realistic props and toys to support "make believe" play decreases during the preschool years (Trawick-Smith, 1990). Indeed, an older preschool-age child is capable of engaging in fantasy play in the absence of any available toys or materials (e.g., opening an invisible door). Finally, whereas younger children tend to exhibit pretense behavior in the form of isolated acts (e.g., holding a cup up to one's mouth), preschoolers are capable of weaving these single acts into integrated play themes (e.g., playing hospital by telling a "sick" child to lie down and giving her some "medicine").

Development of toy play among children with special needs. A number of studies have compared the play characteristics of typically developing preschoolers to that of young children with disabilities (for reviews of this literature see Fewell & Kaminski, 1988; Linder, 1990; Mogford, 1977; Quinn & Rubin, 1984; Rogers, 1982). This research has concentrated largely on examining features of play characteristic of children with particular types of disabilities. Due to the variability within disability categories (e.g., mental retardation, autism, physical disabilities), much of this research is based on heterogeneous samples of children (Fewell & Kaminski, 1988) and does not take into account how individual characteristics such as motivation or temperament mediate toy play for all children. Research on toy play among children with disabilities has also been criticized for being of poor quality and producing inconsistent findings (Quinn & Rubin, 1984). Nevertheless, these data can be useful in helping adults understand how various types of disabilities commonly affect children's global play behaviors.

Young children with cognitive delays generally exhibit the same types of object play found in typically developing children and they follow a similar developmental sequence, but their pace is often delayed and the quality of their play may be reduced (e.g., decreased duration and frequency of involvement with objects) (Gowen, Johnson-Martin, Goldman, & Hussey, 1992; Johnson, & Ershler, 1985; Motti, Cicchetti, & Stroufe, 1983). Moreover, compared to typically developing preschoolers, children with cognitive delays use a limited repertoire of play behaviors, have a more restricted range of selected play materials (Fewell & Kaminski, 1988), and spend more time in unoccupied behavior (Linder, 1990). Stereotypic play behaviors are frequently present among young children with severe or profound cognitive delays (Linder, 1990). However, the development of play in young children with cognitive delays is generally congruent with their development in other areas.

Limited research on the development of toy play has focused on preschoolers who have other types of disabilities. Tait (1972a, 1972b; cited in Olson, 1983) found that

compared to their sighted peers, children ages 4-9 with visual impairments engaged in significantly more manipulative play, but they demonstrated comparable rates of symbolic play and other nonexploratory forms of play. However, other research has shown that young children with visual impairments as well as those with autism and hearing impairments have significant delays in the area of symbolic or fantasy play (Sigmon & Ungerer, 1984; Rogers, 1988). Largely because they cannot observe the play of other children, preschoolers with visual impairments are delayed in their abilities to imitate their peers, integrate single behaviors into elaborate play themes; and coordinate play with objects with social interactions with peers (Fewell & Kaminski, 1988; Linder, 1990). Initial exploration of toys among children with visual impairments may become stereotypic and take the form of mouthing or holding the objects against the face and eyes (Linder, 1990). Children with hearing impairments, on the other hand, do not generally exhibit delays in their play skills until after the first two years of life when children normally begin to use language and objects in representational play (Fewell & Kaminski, 1988; Linder, 1990).

For young children with autism and pervasive developmental disorders (PDD), deficits in the area of communication and sensorimotor integration contribute to a repetitive use of toys, a limited repertoire of play behaviors, and a lack of creativity and symbolic substitution of objects (Mogford, 1977; Sigmon & Ungerer, 1984). Young children with autism frequently develop a strong attachment to one particular toy, but the manner in which they play with the toy may be limited to spinning or some other stereotypic behavior (e.g., rocking, head banging, hand flapping) that precludes meaningful toy encounters as well as interactions with others.

Children with physical disabilities are apt to experience difficulty in locating and tracking objects in their environment due to poor head control; absent or poor locomotor skills preclude exploration and manipulation of toys and play materials; and the lack of fine motor skills prevents these children from reaching, grasping, and releasing objects (Linder,

1990). Due to their inability to move independently, children with physical disabilities sometimes appear to be more passive, less persistent, less engaged with peers and toys, and less motivated than their nondisabled counterparts (Fewell & Kaminski, 1988). As a result, without some form of toy adaptation, young children with motor impairments and physical disabilities generally spend less time exploring and playing with toys and more time looking at them (Brooks-Gunn & Lewis, 1982; Loovis, 1985). Subtle differences in the way high-risk, pre-term infants manipulate objects at nine months of age have also been observed (e.g., rotating, fingering, and transferring objects) (McCune, 1985).

Children's Toy Preferences

Hulson (1930) and Van Alstyne (1932) (both cited in Rubin & Howe, 1985), were two early researchers who investigated the "holding power," popularity, and use of various types of toys among young children who attended nursery school in the 1930's. These studies found that children generally preferred scissors, blocks, clay, and colored cubes over other types of toys. However, older preschoolers were more likely than younger preschoolers to play with these materials in a constructive fashion. Although there is a relative lack of research in this area, more recent studies have investigated children's preferences for toys and materials as a function of age, gender, socioeconomic status, and ability level.

Age. Toy preferences among very young children have largely been inferred based on the quality of their play and observations of how well they negotiate the environment. Dempsey and Frost (1993) identified several characteristics that could be used to distinguish infants' toy preferences from those of preschoolers, with one consideration concerning younger infants' preference for well-lit, open spaces as opposed to toddlers' preferences for enclosure. A second consideration noted by Dempsey and Frost is the need for younger children to have access to realistic toys and props, whereas older preschoolers appear to prefer a combination of "functionally ambiguous" (e.g., pegs, blocks) and "functionally explicit" (e.g., a typewriter) objects (Pellegrini & Boyd, 1993). There are

several reasons for this. First, as previously mentioned, older preschoolers rely less on realistic toys in symbolic or pretend play; and second, they are more capable of using toys in a variety of ways (e.g., using animal puzzle pieces in dramatic play) (Rubin & Howe, 1985; Trawick-Smith, 1990).

Gender. Due largely to social and cultural factors, gender differences in children's preferences for toys appear quite early in development, typically during the toddler period. Research has shown that adult caregivers, particularly fathers, influence young children's preferences for sex-typed toys (Bradley & Gobbart, 1989); that these preferences predispose children to play in groups that are segregated by gender (Pellegrini & Boyd, 1993), and these preferences are reinforced by peers as well as properties of toys that "pull for" certain types of behavior (Rubin & Howe, 1985). Caldera, Huston, and O'Brien (1989) observed 40 parent-infant dyads to determine if exposure to masculine, feminine, or neutral toys affected parent-child interaction. Not surprisingly, the study found that boys were more actively engaged with masculine toys (e.g., trucks; blocks), whereas girls were more involved in feminine toys (e.g., dolls, housekeeping materials); and both boys and girls rejected cross-sex toys. In this study, parents were found to be more involved and animated with same-sex as opposed to cross-sex toys. In addition, toy-type was associated with parental verbal behavior. Feminine toys elicited more teaching, praise, and questions from parents; whereas masculine toys elicited more animated sounds and negative comments.

The role of peers' gender in reinforcing same-sex behaviors among preschool children has also been documented. For example, Shell and Eisenberg (1990) found that 3-, 4-, and 5-year-olds attended to gender-neutral toys (e.g., slinkies, puzzles, wind-up toys) for longer periods when a number of same-sex peers were present as opposed to when these peers were only in general proximity. The study also found that boys' preferences for same-sex toys were more pronounced than they were for girls, a finding that is consistent with other studies (e.g., Carter & Levy, 1988). Due to the relationship

between early preferences for sex-typed toys and later intellectual skills (i.e., doll play among girls is positively correlated with later verbal communication skills; play with legos among boys is associated with later spatial-visual and math skills), it is generally advisable to provide opportunities for young children to play with a variety of toys (Dempsey & Frost, 1993; Rubin & Howe, 1985).

Socioeconomic status (SES). Research investigating the effects of class-differences on children's play has generally supported Smilansky's (1968) early work on this topic (Pellegrini & Boyd, 1993). Smilansky found that lower-SES Israeli children as opposed to their counterparts from middle-class backgrounds exhibited less complex and varied forms of fantasy play. However, Pellegrini and Boyd (1993) point out several considerations which raise questions about this line of research. First, most studies using SES as a variable have confounded race and class. Little is known, for example, about differences that might exist in play patterns among lower-, middle-, and upper-class African American children. A second problem noted by Pellegrini and Boyd is the failure to control for classroom variables such as type of toys, the role of adults, and peer group composition. The authors point out that, even when these factors are considered, children from "non-mainstream" cultures can be expected to spend more time exploring and manipulating toys which are unfamiliar to them, reducing the amount of time they spend in fantasy play. The question of whether culture or SES is a stronger predictor of how young children select and interact with toys has not yet been resolved (Dempsey & Frost, 1993). Vandenberg (1990) notes that although toys reflect cultural intentions, they also reflect personal intentionality by allowing children to construct and attach their own meanings, suggesting that individual differences in children's toy preferences are also an important consideration.

Ability level. Loovis (1985) evaluated toy preferences among preschool children with orthopedic disabilities. Toy preferences were ranked based on duration of play across 20 materials. The study found a relationship between cost and toy preference,

with children preferring the most expensive toys (e.g., tricycle, play gym, circus train) over the least expensive items (e.g., nerf ball, dressy bessy, threading block). Interestingly, toy preferences were not associated with gender, age, ambulation (i.e., ability to move independently from one place to another), or use of fine or gross motor skills. However, children spent more time engaged in toy play when preferred toys were available. Another important finding was that preschoolers with physical disabilities seldom played with toys in a manner that was consistent with their intended use.

Environmental and Contextual Variables

A number of conditions within (and outside) the play environment can influence how young children play with toys (Quilitch & Risley, 1973; Smith & Connolly, 1980). These conditions include the way in which the environment is arranged; the quantity, variety, and complexity of toys available; the presence of peers and adults; the curriculum; and television.

Environmental arrangements. Toy play is affected by environmental arrangements in group care settings. The use of learning or interest areas in preschool classrooms has been labeled a "fundamental practice" in early childhood education (Dempsey & Frost, 1993). A typical early childhood classroom is subdivided into well-defined play areas such as housekeeping (i.e., dolls, dishes, dress-up clothes, other dramatic play props), art (i.e., paints, crayons, clay, paper, scissors), library (i.e., books, tapes), manipulatives, (i.e., puzzles, peg boards), blocks, gross motor (i.e., climbing equipment, riding toys, rocking boat), and sand and water play. These areas are associated with particular forms of play in young children. For example, children who play in the block area tend to play constructively with materials (e.g., building roads and towers); while play with dress-up clothes in the housekeeping corner tends to elicit functional (e.g., putting one's arm through a sleeve) and dramatic forms of play (e.g., wearing a hat and pretending to be the "dad") (Pellegrini and Perlmutter, 1989). However, Pellegrini & Perlmutter (1989) reported that toy play within each of these learning centers was also

mediated by personal variables such as children's age and gender. For example, older preschool girls played in a less sophisticated manner with blocks than did younger preschool girls, suggesting the enhanced sensitivity to gender role expectations among older preschool girls.

The amount of available play space within the classroom, referred to as density, is another important consideration. Rubin and Howe (1985) suggest that decreases in play space have frequently been associated with a reduction in rough-and-tumble play and an increase in dramatic play. Therefore, if facilitating fantasy play among preschoolers is a program goal, it may be necessary to re-configure large, open spaces within the classroom. However, a potential negative effect of decreased space, that of more frequent occurrences of peer conflict and aggression, should also be considered in decisions regarding spatial arrangements (Dempsey & Frost, 1993).

Quantity, variety, complexity, and novelty of toys. Properties of toys such as quantity, availability, and variety can also affect children's play patterns. Young children require a sufficient quantity and variety of toys to minimize the number of conflicts that may arise and stimulate development; however, the availability of too many toys may inhibit social exchanges with peers (Dempsey & Frost, 1993; Olds, 1989; Smith & Connolly, 1980). Novelty is another important consideration. Although it is debatable whether novel toys stimulate exploration (i.e., simple manipulation) or play among young children, it is generally recognized that children can become bored with familiar toys unless these materials are replaced or rotated on a regular basis (Dempsey & Frost, 1993). There is also some evidence suggesting that novel toys may divert the attention of young children with disabilities away from their peers (Lieber, Beckman, & Strong, 1993).

Additional research has examined the effects of structure on children's toy play. Typically developing children generally use constructive forms of play (i.e., product-oriented play) with highly structured objects like puzzles and more creative and flexible forms of play with less structured toys. The absence of any "connotation of theme" in the

materials (e.g., clay, blocks), however, has been associated with less pretend play among young children (Dempsey & Frost, 1993). Ichinose and Clark (1990) reported that children with mental retardation preferred structured toys such as puzzles and form boards over open-ended materials such as blocks; they spent more time than typically developing children exploring, but not playing with, complex toys. Findings regarding their preferences for and play with reactive toys (e.g., jack-in-the box, battery operated toys), however, are mixed.

Research has also examined the effect of varying toy detail on play with toys. Robinson and Jackson (1987) found that, contrary to conventional wisdom, low-detailed replica cars did not produce more "holding power" over 4-year-olds who played with them, but added props in the form of roads did increase theme-related play. Varying car detail had no effect on children's versatility with toy vehicles.

Children's social behavior has been shown to vary as a function of the types of toys they play with (Hendrickson, Strain, Tremblay, & Shores, 1981; Quilitch & Risley, 1973). Toys that enhance social exchanges (e.g., turn-taking, physical assistance, dramatic play) are commonly labeled "social toys," whereas toys associated with playing alone are termed "isolate toys." Beckman and Kohl (1984) observed toy play and the frequency of social interactions among preschoolers with disabilities in integrated preschool classrooms (i.e., serving children with and without disabilities) and segregated settings (i.e., serving only children with disabilities). The children were exposed to three toy conditions: social toys (e.g., toy vehicles, blocks, puppets), isolate toys (e.g., books, puzzles), and a mixed condition consisting of both social and isolate toys. The study found that preschoolers with disabilities interacted more frequently with their peers in the integrated settings and higher rates of social interaction were associated with the social toy condition across both types of settings. These findings, which are consistent with results from more recent investigations (Cowden, & Torrey, 1990; Martin, Brady, & Williams, 1991), suggest that

toys and materials should be considered an important aspect of interventions designed to enhance the social behavior of young children with disabilities.

Adults and peers. Young children are also influenced by the way in which adults present toys and materials to them (Rubin & Howe, 1985), the manner in which they structure play with toys, and their general capacity to be nurturing and supportive (Howes & Stewart, 1987). Children who are encouraged by adults to play with toys in creative ways are more likely to exhibit flexibility and symbolism in their play; whereas children who are "instructed" to use toys in a particular manner are less apt to exhibit these more advanced forms of object play. Hupp, Boat, and Alpert (1992) reported that preschoolers with developmental delays exhibited higher levels of positive emotion when adults encouraged child-centered play with toys as opposed to a condition in which adults were more directive. However, children demonstrated similar levels of mastery behavior (i.e., goal-directed persistence) and success with toys across both conditions. Other research has shown that the popularity of the least preferred toy increases among preschool children when an adult plays with it or merely attends to children's toy play (Quilitch, Christophersen, & Risley, 1979 cited in Ichinose & Clark, 1990) and that children as young as 12 months old will play less with a toy when that toy is paired with negative maternal affect (Hornik, Risenhoover, & Gunnar, 1987).

The effects of peer familiarity and friendship on the quality of toy play has also been documented. Roopnarine and Field (1984) reported that preschoolers with friends were more likely to engage in fantasy play, verbalize to peers, and play in a coordinated fashion (e.g., direct their peers' activities and respond to requests) than were children without friends. In a related study, Doyle, Connolly, and Rivest (1980) examined the effect of peer familiarity on the social interactions of preschoolers and, like Roopnarine and Field, found more occurrences of dramatic play as well as higher levels of social participation and more complex toy play in a familiar versus nonfamiliar playmate condition.

More sophisticated and less isolated toy play has also been documented among young children with disabilities who are educated alongside their typically developing peers compared to those who are exposed exclusively to other children with disabilities (Beckman & Kohl, 1984, 1987; Guralnick, 1981). However, preschoolers with disabilities demonstrate particular deficits in the area of integrating symbolic toy play and social interactions with peers (Lieber & Beckman, 1991a).

Curriculum. Although it is quite likely that the early childhood curriculum affects young children's play with toys, at present the differential effects of various types of curricula on the development of object play are unknown. The National Association for the Education of Young Children (NAEYC) and the National Association of Early Childhood Specialists in State Departments of Education (1990) offer a set of theoretical assumptions and general guidelines for curriculum development that characterize teaching and learning as an interactive process: children construct their own knowledge through active learning and play, but they also learn a great deal by interacting with adults and other children. Curricula specifically designed to promote play behaviors in young children with disabilities such as Learning Through Play (Fewell & Vadasy, 1983) are described in Fewell and Kaminsky (1988).

Television. Argenta, Stoneman, and Brody (1986) investigated the effects of three types of television programming (i.e., cartoons, Sesame Street, and a situation comedy) on the play patterns of preschoolers. The study found that although cartoons and Sesame Street were equally preferred by children over the situation comedy, these two programs affected children's play with toys and peers in different ways. When children viewed cartoons, they were quiet and attentive and tended not to play with toys or interact with their peers. However, viewing Sesame Street resulted in active play with toys for boys and an increase in social exchanges for both boys and girls. The authors suggest that a clue for this finding may lie in Sesame Street's educational format which contains auditory and visual cues to inform children when highly interesting content will follow,

allowing children to divide their attention among their peers, toys, and television. The frequency of active toy play for boys and girls was highest during the situation comedy, children's least preferred program, and during a condition in which the television screen was black.

The effects of violent television programming on the social behavior of young children has interested researchers, educators, and parents alike. Potts, Huston, and Wright (1986) found increased attention to television programs with rapid action content, but not violent content, among boys ages 3-6. In addition, although prosocial toys (e.g., ambulance and paramedic figures, basketball and hoop) elicited cooperative play and aggressive toys (e.g., an inflatable Bobo doll, Star Wars figures) elicited "interpersonal aggression that went well beyond the direct demands of the toys themselves" (p. 13), evidence supporting the relationship between violent programming and aggression was weak. The authors concluded that the properties of toys and environments may counteract, or at least mediate, brief exposure to television programming with violent content.

Considerations in Selecting Toys for Young Children

Categorizing toys. Various systems exist to classify toys. These classification schemes vary depending on whether or not they are based on simple or complex toy characteristics. For example, toy manufacturers commonly suggest recommended age ranges for each product. Thus, toys can be grouped broadly as a function of their age-appropriateness. Researchers have also derived empirically-based classification schemes for grouping toys. Yawkey and Toro-Lopez (1985) presented two classification schemes for play materials. The first scheme consists of a descriptive typology summarized in Table 2. The authors point out that toys in this scheme are multifaceted, multifunctional, and multivaried and they suggest that toys from one category may be used in a manner which corresponds more closely to another (e.g., using constructive toys in a symbolic manner). Table 3 displays two additional classification schemes. Based on researchers' observations of children's play with toys, both systems reflect children's cognitive and social skills and

the sequential levels through which play develops. Yawkey and Toro-Lopez (1985) suggest that toy typologies may be useful for both children with and without disabilities in selecting toys that match children's individual characteristics (i.e., cognitive and social developmental levels) and determining how toys can be used to meet individual and program goals.

Table 2. Descriptive Toy Typology

Type	Purpose	Examples
Instructional Materials	Teach literacy & numeric skills, part-to-whole relationships, one-to-one correspondence, visual memory, & discrimination	Puzzles, stacking toys, nesting toys, pegs & pegboards, button boards, shoelaces, & zippering boards
Constructional Materials	Encourage open-ended, product-oriented play behavior	Unit and table blocks, tinker toys, lincoln logs, legos, dominoes, design cubes
Toys	Replicate or symbolize another object	Housekeeping, transportation, and animate (animal or people) toys including dolls & doll accessories, toy dishes & silverware, cleaning objects, & toy vehicles
Real Objects	Become play materials	Sand, water, wood, mud, cardboard boxes, clothing, pots & pans

Source: Yawkey & Toro-Lopez (1985)

Table 3. Empirically-Based Toy Typologies

McCune-Nicholich (1977):

	Level of Play	Play Behaviors	Toys Suited to this Stage
I.	Pre symbols schemes	Gestures, actions, or movements demonstrating recognition of use or name of objects	Mops, brooms, cups, dishes, baby bottles, toy telephones, combs, clothing
II.	Auto symbolic schemes	Self-related pretend activities	Baby bottles, cups, dishes & silverware
III.	Single scheme symbolic games	Pretend to be other individuals or objects	Dolls, baby bottles, brushes, combs, toy vehicles, & housekeeping objects
	&		
	multiple scheme combinations	Links together several related pretend schemes	Food cans, cardboard boxes, telephones, wood sticks, & paper
IV.	Planned symbolic games	Plan in advance the nature & characteristics of pretend activities	Dolls, doll accessories, adult clothing, other "unstructured" play materials

Yawkey (1983):

	Level of Play	Play Behaviors	Toys Suited to this Stage
I.	Simple play	Uses simple or repetitive movements, gestures, & vocalizations with objects	Toys that produce sounds, stacking toys, differently colored blocks, stringing sets, nesting toys, pegs & pegboards, dolls, & toy vehicles
II.	Fantasy play	Make-believe or pretend play	Dolls & doll accessories, legos, transportation toys, tooth brushes, combs, miniature replicas of cartoon characters, guns, knives, toy animals, tree branches, chalk, wood, & buttons
III.	Reality play	Reproduces real life situations	Realistic miniature objects such as tea sets, farm animals telephones, doctor & dentist accessories, & dolls

Source: Yawkey & Toro-Lopez (1985)

Toy libraries. Toy libraries exist throughout the world to provide parents and children with opportunities to play together with a variety of toys. Four major types of libraries have been identified: (a) community oriented toy libraries, (b) lekoteks or early intervention libraries for children with special needs, (c) toy libraries as cultural, social, and recreational centers, and (d) general toy lending libraries (Bjorck-Akesson & Brodin, 1992). In the U.S., community oriented toy libraries provide toys that may be checked out like books, typically operated through public libraries, mobile libraries, and public school libraries. Some of the services offered by Lekoteks or early intervention libraries include specialized staff, adapted toys and assistive technology for children with severe physical impairments, and computerized educational programs. The third type of program, toy libraries as cultural and recreational centers, are found mostly in European countries where there is an emphasis on traditional toys and games, including handmade toys. Toy lending libraries, the fourth type of toy library, are typically staffed by volunteers who donate and repair toys that are loaned to children living in poverty.

Parent preferences. Fallon and Harris (1989) studied features considered important by parents in the selection of toys for young children. Table 4 presents the ranking of these features in order of most to least important. The first two features, safety and instructional value, were significantly more important to parents than the remaining 15 factors. The study found no differences in parents' ratings on the basis of parents' gender, ethnicity, or whether or not they were parents of children with disabilities. A child's own preferences for particular toys is another important consideration in the selection of toys. In a related study, Christensen and Stockdale (1991) identified five features influencing toy selection patterns among mothers and fathers of preschool children: educational value, durability, parent appeal, flexibility, and child appeal. Parents of children with disabilities often face a dilemma in selecting toys for their children: should they choose a toy that the child will use and enjoy or select a toy that has therapeutic value (Exceptional Parent,

1993)? Because most developmentally appropriate toys can be considered "educational," selecting a number of toys that the child enjoys is likely to be the best strategy.

Table 4. Features Parents Considered Important in the Selection of Toys for Young Children in Rank Order

1. Safety
2. Teaches skills, creativity
3. Durability
4. Flexibility
5. Physical attractiveness to child
6. Length of time child attends
7. Age of child
8. Recommendations from others
9. Child requested toy
10. Information on toy package
11. Cost
12. I just like it
13. Novelty
14. Category, type of toy
15. Physical attractiveness to parent
16. Child's sex
17. Picture or advertisement

Source: Fallon & Harris (1989)

Safety. Safety is an important consideration in the selection of toys for young children. In a study of injury related to child care, toys were found to be the third most

hazardous product found in child care centers, although playground equipment (i.e., climbers and slides) was associated with the most frequent or severe injuries among young children (Aronson, 1983). The prevention of childhood injuries is a topic that requires further study. At a minimum, adults should adhere to age guidelines recommended by toy manufacturers and provide close supervision for activities involving materials or toys that have higher injury ratings. Additional safety guidelines recommended for child care programs serving infants and young children include: (a) eliminating objects with small removable parts, toys that have a diameter of less than 1/4 inch, latex balloons, plastic bags, and styrofoam objects for children under 4 years of age; (b) washing toys that have been mouthed by young children with warm soap and water; and (c) repairing or discarding toys that have sharp edges, breakable glass parts, or loose screws (American Academy of Pediatrics, 1993).

War toys. The question of whether or not young children should be allowed to play with war toys has been controversial, with parents and early educators frequently facing a dilemma about how to deal with children's preferences for such toys (Carlsson-Paige & Levin, 1987). Although adults express concern about the potential relationship between real and pretend acts of aggression, Connor (1989) suggested that aggression may only be "in the eye of the beholder." After viewing 14 videotaped incidents involving aggressive war play among preschoolers, preschool teachers classified each incident as aggressive, whereas male and female college students' responses varied depending on gender (i.e., males viewed fewer incidents as aggressive) and previous experience playing with war toys (i.e., females who had played with war toys characterized fewer incidents as aggressive).

Wegener-Spohring (1989) drew two conclusions from her research on war play based on interviews with 429 fourth-graders in Germany: (a) play with war toys almost always occurs among boys and not girls, and (b) the majority of war play involves "face-to-face" fighting with fantasy figures (e.g., soldiers, cowboys, pirates, Star Wars figures).

Interestingly, although war toys were banned in the kindergarten classrooms, the study documented occurrence of various types of "aggressive games," suggesting that, even without access to commercial war toys, children are capable of constructing their own props to carry out themes related to violence and aggression. The author cautioned against prohibition of war toys, suggesting instead that adults talk with children about their feelings associated with war play and adult desires for a peaceful world.

Based on their review of the war play literature, Carlsson-Paige and Levin (1987) identified two prevailing viewpoints among parents and educators of young children. The first, labeled the developmental view, links war play with children's needs to work on various developmental issues such as gaining control over their impulses, constructing boundaries between reality and fantasy, understanding another's perspective (e.g., alternating "good guy" and "bad guy" roles), and interpreting aspects of their world that children find frightening (e.g., war and violence). The second perspective, the sociopolitical view, states that play with war toys may encourage children to adopt militaristic concepts and values, and therefore should not be permitted. Of particular concern among those who hold this view, are recent changes in the media (i.e., an increase in violent television programming and the number of animated programs with explicit war themes) and the toy industry (e.g., the availability of war toys which correspond to children's television programs with war themes).

Carlsson-Paige and Levin (1987) present four options commonly used by parents and teachers as solutions to the war play dilemma --banning war play, adopting a laissez-faire approach, allowing war play with specific limits, and actively facilitating war play--and present a summary of guidelines and strategies that adults can use to actively facilitate war play, considered by the authors to be the best solution.

Selecting and Adapting Toys for Young Children with Special Needs

Without some type of adaptation or special consideration, many young children with disabilities may not be able to participate fully in toy play activities. Play assessment

can be used to identify the child's developmental level with respect to toy play along with goals and objectives for increasing the child's toy play skills. Assessment generally involves observation of the child's natural play behaviors and classification of those behaviors using a theoretical framework such as Smilansky's (1968) cognitive play sequence (see Table 1). A complete description of play assessment procedures based on various classification schemes can be found in Fewell and Kaminsky (1988). In addition to these, several play assessment instruments have been developed for use with young children with special needs. For example, the Play Assessment Scale (Fewell, 1984) includes procedures for scoring spontaneous play behavior to produce a play age as well as procedures for eliciting and scoring play at higher levels. Transdisciplinary play-based assessment (Linder, 1990) is another approach that is used not only to characterize a child's play with people and objects, but also to document delays in development in other areas, assist in determining service eligibility, and plan and evaluate intervention goals and therapeutic strategies.

Prior to selecting toys for a particular child, it is necessary to consider the child's special needs and abilities, aspects of toys or the environment that motivate the child, and the child's previous experiences with various types of toys. Guidelines for selecting toys and play materials for children with disabilities recommended by Bailey and Wolery (1992) are summarized in Table 5. As a general principal, the toys children are offered should include those that accentuate what they are capable of doing on their own (Exceptional Parent, 1993). Many "off-the-shelf" toys are commercially available and require no modification for children with disabilities. For example, in selecting toys for young children with hearing impairments, caregivers may want to consider toys that are visually reactive or those that provide tactile output (e.g., toy cash register). Children with visual impairments may enjoy toys that are pleasing to touch, that vibrate, blow air, or make interesting sounds (e.g., toy musical instruments). Children who have physical impairments may enjoy toys that offer interesting visual and auditory feedback in addition

to movement (e.g., battery-operated toy animals and vehicles). Reactive toys (i.e., those that move, emit light, make sounds, or are stimulating to touch) are particularly engaging for children with severe disabilities (Bambara, Spiegel-McGill, Shores, & Fox, 1984).

Table 5. Guidelines for Selecting Toys & Play Materials for Children with Special Needs

1. Toys & play materials should be responsive (i.e., toys that emit sound, movement, or light when activated by the child).
2. Toys & play materials should be age-appropriate. In general, toys and materials that are appropriate for typically developing infants, toddlers, and preschoolers are appropriate for young children with disabilities.
3. When necessary, toys and materials should be adapted to increase engagement and learning.
4. Play materials should include naturally occurring object such as boxes, kitchen utensils, and packing materials.
5. Toys and play materials should be selected to promote learning of important skills.

Source: Bailey, D., & Wolery, M. (1992). *Teaching Infants and Preschoolers with Disabilities*. New York: Merrill.

For some infants and preschoolers, however, it may be necessary to adapt or enhance toys to ensure that children are exposed to a range of interactive and reactive experiences and fuller participation than would otherwise be possible (Johnson, 1993). According to Langley (1985), simple modifications can be achieved by adding an element to the toy, stabilizing the toy, modifying the response mode, and through unconventional positioning of the toy. For example, plastic rings can be added to toys to facilitate the child's grasp; wooden knobs can be glued to toy parts to make them easier to manipulate; foam pieces can be added to page corners to make it easier to turn the pages of a book; and velcro can be applied to children's gloves or sweat-bands to make it easier for them to pick up, hold, and use toys (Langley, 1985; Pierce, 1993; Wright & Nomura, 1987). Suggestions for stabilizing toys include gluing magnetic strips on to toys which can be

positioned upright on a cookie sheet and adhering toys to surfaces using suction cups, c-clamps, dycem matting, and sandbags (Langley, 1985). Placing toys at an angle on an easel or adding velcro make some toys more stable and puts them within reach of children with limited range of motion (Goosens & Crain, 1986; Goosens, Crain, & Elder, 1992). To achieve unconventional positioning, Langley (1985) suggests that toys be suspended from the ceiling using a pulley or, if combining toys is the goal, using a hoola hoop to suspend multiple toys around the perimeter. Toys with "on" and "off" switches can be modified by adding a larger, pressure-sensitive electronic switch that can be used by any body part. Adaptive switches that can be activated by blowing on them, raising an eye-brow, or blinking one's eyes are available from a variety of commercial sources (see for example, Berliss, Borden, & Vanderheiden, 1989) or can be made inexpensively at home (Burkhart, 1980; Rappaport & Schulz, 1989). Adaptive switches can be installed permanently or temporarily, but temporary adaptations are sometimes frustrating for children and caregivers to use. They work inconsistently and special safety precautions are advised when using toys and devices that have been adapted with microswitches (Johnson, 1993). Detailed descriptions on the use of microswitches can be found in York, Nietupski, and Hamre-Nietupski (1985), Musselwhite (1986), Burkhart (1993), and Goosens et al. (1992).

Toy play can also be facilitated by making adjustments to the play environment. Rogers (1988) offers general strategies to enhance toy play among preschoolers with various types of disabilities. First, she suggests that it is important to expose children with disabilities to toys and materials that stimulate the most mature play levels of which they are capable. Second, the play environment (i.e., choice of materials, social grouping, and adult involvement) should be carefully arranged to reduce distractions and promote engagement with people and objects (Cavallaro, Haney, & Cabello, 1993). Third, play coaching emphasizing imitation skills and presymbolic forms of play (e.g., cause and effect, combinations) may be useful with some children. Finally, to assist children in

making the transition into more representational forms of play, it may be necessary to use direct-instruction techniques.

Because of the spontaneous, child-initiated nature of play, direct instruction to encourage it is rarely necessary among typically developing young children. However, infants and preschoolers with disabilities may benefit from a variety of adult-mediated approaches that differ along a continuum from facilitation to directiveness. In recent years, developmentally appropriate strategies emphasizing adult facilitation and "scaffolding" of children's naturally occurring play activities have been encouraged over more directive approaches. Although not specific to play skills, a great deal of research has been devoted to developing and evaluating various strategies for teaching young children with disabilities. Bailey and Wolery (1992) have categorized these approaches to include the following:

- arranging the physical environment to promote play, engagement, and learning;
- arranging the social environment to include competent play partners and responsive adults;
- using children's preferences for toys and activities;
- structuring daily routines and play activities (e.g., helping children agree on a play theme and assume play roles), adopting transition-based learning (i.e., presenting a learning opportunity during transitions between activities);
- using differential reinforcement, response shaping, and correspondence training (i.e., presentation of reinforcement under defined conditions);
- using trained peers to promote appropriate play and social behaviors;
- using naturalistic or milieu teaching strategies (e.g., responding to child-initiated play);
- using response prompting procedures (i.e., providing the child with assistance in making a desired response); and

- using stimulus modifications (i.e., changing the materials that elicit responses from the child).

The use of these approaches or combination of approaches to promote appropriate toy play among young children with disabilities must be individually determined. One example from the literature of an approach shown to be effective in teaching toy play to preschoolers with autism consisted of shaping and least-to-most prompting (i.e., beginning with no prompts and progressing to verbal directions, gestures, physical guidance) and redirection for inappropriate behaviors with toys (Lifter, Sulzer-Azaroff, Anderson, and Cowdery, 1993). Other suggestions from the literature for promoting full participation in play activities include adult-mediation strategies (e.g., questioning, encouraging, commenting, modeling, attending and responding to children's interests and intent, and adjusting the adult's response to match the child's ability) and peer-mediated strategies (e.g., peer imitation training, peer tutoring and coaching) (Cavallaro, Haney, & Cabello, 1993).

Finally, for the vast majority of young children with disabilities, increasing interaction skills and promoting social relationships with peers is an important goal of intervention efforts. Because play with toys is a fundamental context for social interactions with peers (Bradley, 1985), competent toy play should be viewed as a necessary precursor to social competence with peers. To assist young children with disabilities in coordinating their attention and behaviors with that of a social partner, Lieber and Beckman (1991b) recommend that adults select toys that encourage social exchanges and turn-taking with peers (e.g., puppets, balls) rather than toys that encourage children to play by themselves (e.g., books, puzzles); provide sufficient opportunities for children to play together in pairs rather than exclusively in groups; and expose children to competent play partners (i.e., typically developing children). In selecting play partners for young children with disabilities, adults should consider a child's playmate preferences in the same way that they consider the child's preferences for particular types of toys.

Implications from Research: Guidelines for Promoting Developmentally Appropriate Toy Play in Early Childhood

Based on implications from the research literature, we developed the following guidelines to assist parents and educators in making decisions about selecting developmentally appropriate toys and arranging the play environment in a manner that supports young children's happiness and general well-being as well as their cognitive and social development. Guidelines for adapting toys and the play environment for children with disabilities are presented last, since these suggestions should only be implemented if needed, after considering general guidelines for supporting normal toy play activities for all children.

Guideline 1. Consider children's toy preferences and individual characteristics. Children's toy preferences and their individual characteristics are important considerations in the selection of appropriate toys for young children. Even infants who are not yet capable of verbalizing can indicate their toy preferences through their nonverbal behaviors and vocalizations. For example, a child may gesture by reaching for a favorite toy located on a top shelf or offer a preferred toy to a caregiver to engage the caregiver in a favorite play theme. By observing a child's toy preferences, adults can determine if the child is interested in toys that elicit particular types of play behaviors (e.g., constructive toys like blocks and legos); or if the child is primarily interested in mastering challenging tasks, exploring features of toys and how they work, interacting with peers or adults, or some combination of these things.

In addition to identifying children's toy preferences, adults should consider each child's individual characteristics in selecting developmentally appropriate toys. The child's age, gender, socioeconomic status, and ability level are just a few of the child characteristics examined in this chapter. Others worthy of consideration include the child's temperament, motivation, cultural and ethnic background, and attachment history. In general, however, adults should think about the predictable manner in which young

children play with toys at various stages of development, with exploration being the predominant play form during infancy and fantasy play prevailing during the preschool period.

Guideline 2. Select toys that are durable, flexible, appealing, and safe. Along with child characteristics and toy preferences, consideration of these features should assist adults in making the best toy selections for young children.

Guideline 3. Identify individual or program goals associated with toy play. Although play with toys should be valued simply because it enhances the well-being of young children, it is also viewed as a means to an important end, supporting children's social and cognitive development. If an individual or program goal emphasizes the development of social interactions and relationships with peers, then toys that promote these behaviors should be made available to young children. Social toys include those that promote sharing, turn-taking, and pretense play. On the other hand, if cognitive development is the goal, age-appropriate toys that move children from the exploration and manipulation stage to more advanced levels of object play are preferred. Ideally, early childhood educators and parents will embrace both of these goals and, in addition, will support young children as they learn how to coordinate toy play with social interactions with peers.

Guideline 4. Recognize the influence of cultural values and beliefs on young children's toy preferences and play behaviors. To some extent, the way young children approach and interact with toys reflects their diverse experiences, cultural backgrounds and beliefs. Early childhood educators should aim to equip their classrooms with toys that reflect multicultural values, as opposed to providing toys which overrepresent a particular culture or socioeconomic group.

This chapter touched upon the issue of gender-typed toys, a topic of concern among some parents and educators of young children. Largely because of adult expectations, differences in the way boys and girls play with toys emerge early and are maintained

throughout a child's life. Although parents and educators may be reluctant to promote cross-gender toy play in young children, they should at least recognize the significance of their influence on young children's toy preferences, and the relationship between play with gender-typed toys in early childhood and later intellectual skills.

Guideline 5. Arrange the play environment in a manner that supports children's exploration and play with toys. A high-quality play environment supports children's exploration and play with toys. In arranging the play environment, adults should consider the physical arrangement of the rooms and play density; the quantity, variety, complexity, and novelty of toys that are available to children; and the social aspects of the play environment (i.e., peer group composition and number of adults). Depending on children's individual needs, an adult's role in providing a supportive play environment may include no intervention, prompted discovery and learning, or directed discovery and learning (Dempsey & Frost, 1993).

Guideline 6. Adapt toys and the play environment to meet the needs of young children with special needs. Special considerations are often necessary to ensure that young children with disabilities fully participate in toy play activities. Before making decisions about adaptations, adults should consider the child's special needs and abilities, aspects of toys or the environment that motivate the child, and the child's previous experiences with toys. For some infants and preschoolers with disabilities, "off-the-shelf" toys that are commercially available and require no modification may be sufficient to promote engagement, enjoyment, and learning. For many other children, however, it will be necessary to adapt or enhance toys in the following ways to expose them to a full range of interactive and reactive experiences:

- adding an element to a toy;
- stabilizing the toy;
- modifying the response mode; and
- positioning the toy (Langley, 1985).

Toy play can also be facilitated by making adjustments to the play environment (e.g., selecting toys that are stimulating but not overly challenging, arranging toys to promote engagement and reduce distractions, ensuring that competent social partners are available) and through adult facilitation. As mentioned previously, depending on the child's needs and the goals of the program, adult facilitation may range from careful arrangement of the environment to direct instruction using behavioral techniques that have been tested and validated by research.

Future Directions

In the same way that knowledge about the benefits of toy play has evolved over time, the types of toys that are available and valued for infants and young children will continue to change. According to Vandenberg (1990), at least two aspects of the present day world contribute to these changes. First, with the transformation from a predominantly rural to an urban nation, toy play has moved increasingly from outdoor environments into indoor settings: houses, apartment complexes, child care and community centers. Second, largely as a reflection of what one needs to survive in a "complex technological world," societal values have shifted away from an emphasis on physical abilities toward the need for critical thinking skills and the ability to access information. The types of toys and technology that are manufactured for young children in the future will likely reflect these and other societal shifts in values. Furthermore, the boundary distinguishing traditional toys from educational devices employing state-of-the-art technology is becoming less distinct. It now appears inevitable that interactive video and sophisticated computer software packages will be part of the "high tech" toy box of the future. Ultimately, the amount of leeway that young children are given will determine whether something is a toy or an instructional material (Vandenberg, 1990), or both.

At the same time, additional efforts are needed to ensure that young children with disabilities are able to participate fully in a wide range of normal toy play experiences. For a variety of reasons, these efforts should not focus solely on developing specialized,

adaptive toys and equipment. First, the number of adaptive toy and equipment catalogs that are currently distributed suggests that manufacturers already produce an ample supply of such products. Compared to toys that are marketed for nondisabled consumers, however, adaptive toys tend to be considerably more expensive, but are of similar or higher quality. Second, the exclusive use of specialized toys and devices that are different from those used and enjoyed by all young children reduces the extent to which toy play experiences for youngsters with disabilities can be considered normalized and developmentally appropriate. As a result, general toy manufacturers should consider how their products might better serve a wide group of young consumers with diverse backgrounds and abilities, including young children with developmental delays and other types of physical, sensory, and cognitive disabilities. One simple, but potentially effective strategy, would involve modifying toy packaging to include directions for how a toy could be adapted to meet the needs of children with disabilities. These directions could include information about how a toy could be augmented or simplified to enhance or reduce sensory output. For example, instructions could specify how toys can be augmented by attaching them to microchips which contain sound effects like those found in greeting cards. Instructions could also specify how toy simplification can be achieved by severing wires that produce unwanted blinking lights or loud noise. Of course, field testing these and other suggestions and obtaining consumer feedback are important considerations in the development of toy adaptation guidelines and strategies.

Finally, additional research is needed to determine how various types of toys and the properties of toys can be used to elicit desired responses in young children with disabilities. For example, it is currently unknown which toys facilitate mastery behaviors (i.e., goal directedness, persistence, engagement) in young children with disabilities and which are overly challenging (i.e., frustrating) at various developmental stages. Although reactive toys -- those that produce light, sound, and movement -- are generally considered therapeutic for young children with disabilities, aspects of reactivity that best facilitate play

behaviors and learning in these children are also unknown (Hupp & Abbeduto, 1991). Additional research is also needed to examine adult-mediated strategies that support and facilitate children's play with toys and peers. These efforts should focus specifically on helping adults make decisions about when it is appropriate to intervene, and if so, whether interventions should be more facilitative or directive in nature. Finally, since the vast majority of young children with disabilities have particular difficulties in the area of symbolic substitutions and fantasy play, strategies are needed to assist children in using toys in a more representational manner, and in coordinating their pretend play activities with social interactions with peers (Lieber & Beckman, 1991a). The remarkable ability of the social partner to enhance the learning and enjoyment associated with toy play is what makes this last consideration particularly important for all children.

References

American Academy of Pediatrics, Pennsylvania Chapter (December, 1993). Model child care health policies. Bryn Mawr, PA.

Aronson, S. S. (1983). Injuries in child care. Young Children, 19-20.

Argenta, D. M., Stoneman, Z., & Brody, G. H. (1986). The effects of three different television programs on young children's peer interactions and toy play. Journal of Applied Developmental Psychology, 7, 355-371.

Bailey, D. B., & Wolery, M. (1992). Teaching infants and preschoolers with disabilities (2nd ed). New York: Merrill.

Bambara, L., Spiegel-McGill, P., Shores, R., & Fox, J. (1984). A comparison of reactive and non-reactive toys on severely handicapped children's manipulative play. Journal of the Association for Persons with Severe Handicaps, 9, 142-149.

Beckman, P. J., & Kohl, F. L. (1984). The effects of social and isolate toys on the interactions and play of integrated and nonintegrated groups of preschoolers. Education and Training of the Mentally Retarded, 19, 169-174.

Beckman, P. J., & Kohl, F. L. (1987). Interactions of preschoolers with and without disabilities in integrated and segregated settings. Mental Retardation, 25(1), 5-11.

Belsky, J., & Most, R. K. (1981). From exploration to play: A cross-sectional study of infant free play behavior. Developmental Psychology, 17(5), 630-639.

Berliss, J., Borden, P., & Vanderheiden, G. (1989). Trace resource book. Madison, WI: Trace Research and Development Center.

Bjorck-Akesson, E. M., & Brodin, J. M. (1992). International diversity of toy libraries. Topics in Early Childhood Special Education, 12(4), 528-543.

Bradley, R. H. (1985). Social-cognitive development and toys. Topics in Early Childhood Special Education, 5(3), 11-30.

Bradley, B., & Gobbart, S. K. (1989). Determinants of gender-typed play in toddlers. Journal of Genetic Psychology, 150(4), 453-455.

Brooks-Gunn, J., & Lewis, M. (1982). Development of play behavior in handicapped and normal infants. Topics in Early Childhood Special Education, 2(3), 14-27.

Bruner, J. (1972). The nature and uses of immaturity. American Psychologist, 27, 687-708.

Bruner, J. (1973). Organization of early skilled action. Child Development, 44, 1-11.

Burkhart, L. (1980). Home-made battery-powered toys and educational devices for severely-handicapped children. Eldersburg, MD: 6201 Candle Court.

Burkhart, L. (1993). Total augmentative communication in the early childhood classroom. Eldersburg, MD: 6201 Candle Court.

Caldera, Y. M., Huston, A. C., & O'Brien, M. (1989). Social interactions and play patterns of parents and toddlers with feminine, masculine, and neutral toys. Child Development, 60, 70-76.

Carlsson-Paige, N., & Levin, D. E. (1987). The war play dilemma: Balancing needs in the early childhood classroom. New York: Teachers College Press.

Carter, D., & Levy, G. D. (1988). Cognitive aspects of early sex-role development: The influence of gender schemas on preschoolers' memories and preferences for sex-typed toys and activities. Child Development, 59, 782-792.

Cavallaro, C. C., Haney, M., & Cabello, B. (1993). Developmentally appropriate strategies for promoting full participation in early childhood settings. Topics in Early Childhood Special Education, 13(3), 293-307.

Christensen, K. E., & Stockdale, D. F. (1991). Predictors of toy selection criteria of preschool children's parents. Children's Environments Quarterly, 8(1), 25-36.

Connor, K. (1989). Aggression: Is it in the eye of the beholder? Play and Culture, 2, 213-217.

Cowden, J. E., & Torrey, C. C. (1990). A comparison of isolate and social toys on play behaviors of handicapped preschoolers. Adapted Physical Activity Quarterly, 7(2), 170-182.

Dempsey, J. D., & Frost, J. L. (1993). Play environments in early childhood education. In B. Spodek (Ed.), Handbook of research on the education of young children (306-321). New York: Macmillan.

Doyle, A., Connolly, J., & Rivest, L. (1980). The effect of playmate familiarity on the social interactions of young children. Child Development, 51, 217-223.

Exceptional Parent (1993). Choosing holiday toys, 23(8), 18-22.

Fallon, M. A., & Harris, M. B. (1989). Factors influencing the selection of toys for handicapped and normally developing preschool children. Journal of Genetic Psychology, 150(2), 125-134.

Fewell, R. R. (1984). Play Assessment Scale (4th ed.). Unpublished document. Seattle: University of Washington.

Fewell, R. R., & Kaminski, R. (1988). Play skills development and instruction for young children with handicaps. In S. L. Odom & M. B. Karnes (Eds.), Early intervention for infants and children with handicaps: An empirical base (pp. 145-158). Baltimore: Paul H. Brookes.

Fewell, R. R., & Vadasy, P. F. (1983). Learning through play. Allen, TX: Developmental Learning Materials.

Goosens, C., & Crain, S. (1986). Augmentative communication intervention resource. Wauconda, IL: Don Johnston, Inc.

Goosens, C., Crain, S., & Elder, P. (1992). Engineering the classroom environment for interactive symbolic communication: An emphasis on the developmental period, 18 months to five years. Birmingham, AL: Southeast Augmentative Communication Conference.

Gowen, J. W., Johnson-Martin, N., Goldman, B. D., & Hussey, B. (1992). Object play and exploration in children with and without disabilities: A longitudinal study. American Journal on Mental Retardation, 97(1), 21-38.

Guralnick, M. J. (1981). The social behavior of preschool children at different developmental levels: Effects of group composition. Journal of Experimental Child Psychology, 31, 115-130.

Harter, S. (1978). Effectance motivation reconsidered: Toward a developmental model. Human Development, 21, 34-64.

Hendrickson, J. M., Strain, P. S., Tremblay, A., & Shores, R. E. (1981). Relationship between toy and material use and the occurrence of social interactive behaviors by normally developing preschool children. Psychology in the Schools, 18, 500-504.

Howes, C., & Steward, P. (1987). Child's play with adults, toys, and peers: An examination of family and child-care influences. Child Development, 23(3), 423-430.

Hornik, R., Risenhoover, N., & Gunnar, M. (1987). The effects of maternal positive, neutral, and negative affective communications on infant responses to toys. Child Development, 58, 937-944.

Hupp, S. C., & Abbeduto, L. (1991). Persistence as an indicator of mastery motivation in young children with cognitive delays. Journal of Early Intervention, 15(3), 219-225.

Hupp, S. C., Boat, M. B., Alpert, A. S. (1992). Impact of adult interaction on play behaviors and emotional responses of preschoolers with developmental delays. Education and Training in Mental Retardation, 27(2), 145-152.

Ichinose, C. K., & Clark, H. B. (1990). A review of ecological factors that influence the play and activity engagement of handicapped children. Child's Family Behavior Therapy, 12(3), 49-76.

Jacobson (1981). The role of inanimate objects in early peer interaction. Child Development, 52, 618-626.

Johnson, S. (1993). Adapting toys and using adaptive switches. In P. Pierce (Ed.), Baby power: A guide for using assistive technology with infants and toddlers (pp. 31-48). Raleigh, NC: Department of Human Resources.

Johnson, J. E., & Ershler, J. L. (1985). Social and cognitive play forms and toy use by nonhandicapped and handicapped preschoolers. Topics in Early Childhood Special Education, 5(3), 69-82.

Langley, M. B. (1985). Selecting, adapting, and applying toys as learning tools for handicapped children. Topics in Early Childhood Special Education, 5(3), 101-118.

Lieber, J., & Beckman, P. J. (1991a). Social coordination as a component of social competence in young children with disabilities. Focus on Exceptional Children, 24(4), 1-10.

Lieber, J., & Beckman, P. J. (1991b). The role of toys in individual and dyadic play among young children with handicaps. Journal of Applied Developmental Psychology, 12, 189-203.

Lieber, J., Beckman, P. J., & Strong, B. N. (1993). A longitudinal study of the social exchanges of young children with disabilities. Journal of Early Intervention, 17(2), 116-128.

Lifter, K., Sulzer-Azaroff, B., Anderson, S. R., & Cowdery, G. E. (1993). Teaching play activities to preschool children with disabilities: The importance of developmental considerations. Journal of Early Intervention, 17(2) 139-159.

Linder, T. W. (1990). Transdisciplinary play-based assessment: A functional approach to working with young children. Baltimore: Paul H. Brookes.

Loovis, E. M. (1985). Evaluation of toy preferences and associated movement behaviors of preschool orthopedically handicapped children. Adapted Physical Activity Quarterly, 2, 117-126.

Martin, S. S., Brady, M. P., & Williams, R. E. (1991). Effects of toys on the social behavior of preschool children in integrated and nonintegrated groups: Investigation of a setting event. Journal of Early Intervention, 15(2), 153-161.

McCune, L. (1985). Infant special education: Interactions with objects. Topics in Early Childhood Special Education, 5(3), 59-68.

Mogford, K. (1977). The play of handicapped children. In B. Tizard & D. Harvey (Eds.), Biology of play (pp. 170-184). Philadelphia: J. B. Lippincott.

Motti, F., Cicchetti, D., & Stroufe, L. A. (1983). From infant affect expression to symbolic play: The coherence of development in Down syndrome children. Child Development, 54, 1168-1175.

Mueller, E. (1979). (Toddlers + toys)=(an autonomous social system). In M. Lewis & L. Rosenblum (Eds.), The child and its family. New York: Plenum.

Musselwhite, C. (1986). Adaptive play for special needs children. Austin, TX: Pro-Ed.

National Association for the Education of Young Children & the National Association of Early Childhood Specialists in State Departments of Education. (1990). Guidelines for appropriate curriculum content and assessment in programs serving children ages 3 through 8. In S. Bredekamp & T. Rosegrant (Eds.), Reaching potentials: Appropriate curriculum and assessment for young children, Vol. 1 (pp. 9-27). Washington, D.C.: NAEYC.

Olds, A. R. (1989). Psychological and physiological harmony in child care center design. Children's Environments Quarterly, 6, 8-16.

Olson, M. R. (1983). A study of the exploratory behavior of legally blind and sighted preschoolers. Exceptional Children, 50(2), 130-138.

Parten, M. (1932). Social participation among preschool children. Journal of Abnormal and Social Psychology, 27, 243-269.

Pellegrini, A. D., & Boyd, B. (1993). The role of play in early childhood development and education: Issues in definition and function. In B. Spodek (Ed.), Handbook of research on the education of young children (pp. 105-121). New York: Macmillan.

Pellegrini, A. D., & Perlmutter, J. C. (1989). Classroom contextual effects on children's play. Developmental Psychology, 25(2), 289-296.

Piaget, J. (1932). The moral judgment of the child. New York: Free Press.

Pierce, P. P. (1993). Emergent literacy: What young children can learn about reading and writing before they go to school. In P. Pierce (Ed.), Baby power: A guide for using assistive technology with infants and toddlers (pp. 88-100). Raleigh, NC: Department of Human Resources.

Potts, R., Huston, A. C., & Wright, J. C. (1986). The effects of television form and violent content on boys' attention and social behavior. Journal of Experimental Child Psychology, 41, 1-17.

Quilitch, H. R., & Risley, T. R. (1973). The effects of play materials on social play. Journal of Applied Behavior Analysis, 6, 573-578.

Quinn, J. M., & Rubin, K. H. (1984). The play of handicapped children. In J. D. Yawkey & A. D. Pellegrini (Eds.), Children's play: Developmental and applied (pp. 63-80). Hillsdale, NJ: Lawrence Erlbaum Associates.

Rappaport, L., & Schulz, L. (1989). Creative play activities for children with disabilities. Champaign, IL: Human Kinetics Books.

Robinson, C. C., & Jackson, R. (1987). The effects of varying toy detail within a prototypical play object on the solitary pretend play of preschool children. Journal of Applied Developmental Psychology, 8, 209-220.

Rogers, S. J. (1988). Cognitive characteristics of handicapped children's play: A review. Journal of the Division for Early Childhood, 12(2), 161-168.

Rogers, S. J. (1982). Developmental characteristics of young children's play. In G. Ulrey & S. J. Rogers (Eds.), Psychological assessment of handicapped infants and young children (pp. 65-83). New York: Thieme-Stratton.

Roopnarine, J. L., & Field, T. M. (1984). Play interactions of friends and acquaintances in nursery school. In T. M. Field, J. L. Roopnarine, & M. Segal (Eds.), Friendships in normal and handicapped children (pp. 89-98). Norwood, NJ: Ablex.

Rubin, K., & Howe, N. (1985). Toys and play behaviors: An overview. Topics in Early Childhood Special Education, 5(3), 1-9.

Rubin, K., Maioni, T., & Hornung, M. (1976). Free play behaviors in middle and lower class preschoolers: Parten and Piaget revisited. Child Development, 47, 414-419.

Shell, R., & Eisenberg, N. (1990). The role of peers' gender in children's naturally occurring interest in toys. International Journal of Behavioral Development, 13(3), 373-388.

Sigmon, M. & Ungerer, J. A. (1984). Cognitive and language skills in autistic, mentally retarded, and normal children. Developmental Psychology, 20(2), 293-302.

Smilansky, S. (1968). The effects of sociodramatic play on disadvantaged preschool children. New York: Wiley.

Smith, P. K., & Connolly, K. (1980). The ecology of preschool behavior. Cambridge, UK: Cambridge University Press.

Trawick-Smith, J. (1990). The effects of realistic versus non-realistic play materials on young children's symbolic transformations of objects. Journal of Research in Childhood Education, 5(1), 27-36.

Vandenberg, B. (1990). Toys and intentions. Contemporary Education, 61(4), 200-203.

Wegener-Spohring, G. (1989). War toys and aggressive games. Play and Culture, 2, 35-47.

Wright, C. & Nomura, M. (1987). From toys to computers: Access for the physically disabled child. Wauconda, IL: Don Johnston, Inc.

Yawkey, T. D., & Toro-Lopez, J. A. (1985). Examining descriptive and empirically based typologies of toys for handicapped and nonhandicapped children. Topics in Early Childhood Special Education, 5(3), 47-58.

York, J., Nietupski, J., & Hamre-Nietupski, S: (1985). A decision-making process for using micro-switches. Journal of the Association for Persons with Severe Handicaps, 10, 214-223.